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Kremlin to allow conference on parapsychology

By Paul Wohl

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Another rampart of Soviet conservatism has fallen. The study of the subconscious, psychoanalysis, and parapsychology no longer are taboo in the Soviet Union.

A large international conference on psychic phenomena has been called by the Georgian Academy of Sciences for September, 1978.

About a hundred specialists from the United States, France, Italy, Great Britain, West Germany, and Austria have been invited. Their list reads like a select Who's Who of Freudian and

Analysis

Jungian psychoanalysis, which the Soviets until recently condemned as "Jewish psychology" and an attempt at "policing of the soul."

Some 60 Westerners are reported to have accepted the invitation. Among them, the dissident French Communist and

onetime member of the French party's central committee, Louis Althusser.

Yet only last year Edward K. Na'umov, the best-known Soviet psychic researcher, disappeared in disgrace and experiments in psychokinetics were halted. The correspondent of the Los Angeles Times, Robert C. Toth, was arrested and a 25-page memorandum on Soviet experiments in the field, which he had received from a Soviet biologist, confiscated.

Once again parapsychology was branded as "anti-socialist, idealistic fiction," a description given it in the 1956 edition of the Soviet encyclopedia.

Now, like cybernetics, which under Stalin and in the immediate post-Stalin era was denounced as a bourgeois fraud, psychic research seems to have been salvaged by the realistic-minded Soviet military.

For many years the Soviet military has made experiments with thought control and related phenomena which did not fit in with the findings of the Russian physiologist Ivan Pavlov, whose conditioned reflex theory was the only psychological theory recognized by the official ideology.

Just as in the case of cybernetics, the military was undismayed by ideological dogmatism. Experiments with telepathy have been carried on secretly in Russia for half a century. There exists in Lvov in Galicia an institute of strategic psychology studies. The ill-famed Srebry Institute, of Leningrad, which became more widely known in the West through its force "treatment" of allegedly psychopathic dissidents, has an institute of forensic psychiatry which studies the subconscious.

After it had been reported that the U.S. Navy had experimented with thought transmission and psychokinesis, Kon somolskaya Pravda published an article in 1966 about two experiments in thought transmission between Moscow and distant Novosibirsk.

The following year Mr. Na'umov obtained the authorization to convene an international gathering of parapsychologists in Moscow. Little came of it, however. Mr. Na'umov's activities were increasingly restricted. In 1974 he was sentenced to two years of forced labor. His eclipse did not last long.

In a letter from Moscow dated Dec. 6, 1974, he informed Western associates that he "was going to continue [his] research activities. . . . Any new idea demands a lot of effort to be pushed through."

Now at last Mr. Na'umov's efforts have obtained a modicum of recognition. Although it is unlikely that Mr. Na'umov will be allowed to attend the seminar on problems of the subconscious in Tbilisi, the fact that an international gathering has been called by the Academy of Sciences of Georgia is proof that the Soviets attribute importance to the subconscious and seek to coordinate their research with that of the West.

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No EM detected in ESP study

Extrasensory phenomena may represent nothing more than a bag of conjurer's tricks, but attempts to explain such phenomena can turn into a bag of worms. As soon as scientists and magician consultants explain away some alleged psychic phenomenon, another one appears. E. Balanovski and J.G. Taylor of King's College, London, take a different approach. Instead of trying to explain what ESP is, they attempt to show what it is not. They have deduced that electromagnetic (EM) radiation "is the only known force that could conceivably be involved," and after three years of testing they report in the Nov. 2 NATURE "no abnormal EM signals during the occurrence of supposed ESP phenomena."

Attempts to link EM and ESP go back at least 45 years, but Balanovski and Taylor say that the various tests were unconfirmed, lacking in statistical significance or excluded some portion of the EM spectrum. For their own work they used 14 types of EM detectors, covering a wide range of frequencies, together with two videotape cameras, one to keep a continuous record of subjects' performances, the other to record the readouts of the detectors.

Five phenomena were investigated: psychokinesis (movement of objects without physical contact), metal bending, psychic healing, dowsing and telepathy. In all tests, all subjects always claimed to be in a good psychic state.

One test of psychokinesis involved attempts to rotate a needle suspended from a thread inside a clear cylinder. Subjects were allowed to move their hands and wrists back and forth around the cylinder about 5 cm from it. In 12 sessions the subjects produced a 60° average rotation of the needle, but when an antistatic ointment was rubbed on the cylinder the phenomenon vanished, indicating, say the researchers, "that the effect was due to charge induced on the needle from the outside surface of the cylinder." Videotape analysis showed the subjects inadvertently touching the cylinder, and further tests showed that the amount of rotation was correlated to the amount of charge on the surface of the cylinder. Other investigations of alleged psychokinesis were similarly explained, and no abnormal EM radiation was found to be involved.

The metal benders (68 subjects, 268 trials) were unable to perform their magic while the video machines were on, but when they performed under less rigid conditions "they sometimes were apparently successful." Metal bending occurred (paperclips, spoons, and so on), but no unusual EM emissions from the subjects' bodies were detected over the entire spectrum. Therefore, say the researchers, EM

radiation cannot explain metal bending which occurred only under relaxed conditions.

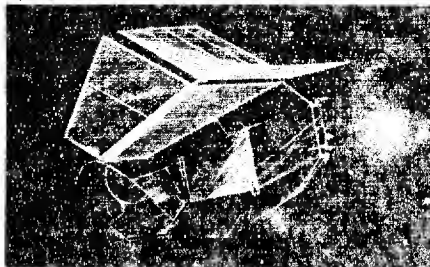
Tests of psychic healing (laying on of hands) involved attempts to detect EM coming from the "healer" as well as "patients'" ability to detect EM radiation. Results were negative on both counts. The researchers conclude that faith healing can be explained by a "purely (albeit complex) psychological effect of the healer on the patient."

Dowsing (a sudden flicking of a rod or rotation of a pendulum when the dowser reaches a place where an object being dowsed is supposedly located) was explained as "muscular twitches brought about by subconscious mental activity." The EM radiation emitted was the same as background levels observed before and after each dowsing session.

All attempts at telepathy (mind reading) were unsuccessful, and no EM signals other than background were observed.

In conclusion: Faith healing, psychokinesis and dowsing were explained in normal scientific terms, telepathy was not demonstrated and metal bending was not observed under controlled conditions. And throughout the experimentation there was a consistent lack of any unusual type of EM radiation. □

HEAO-2 launched



The first High Energy Astronomy Observatory satellite, HEAO-1, was sent aloft on Aug. 12, 1977, to search the sky for the X-ray sources that comprise one of the newest branches of astronomy. Still at work, it is believed by now to have catalogued as many as 1,500. This week, on Nov. 13, HEAO-2 was launched to take detailed looks at the targets its predecessor found. The 3,150-kilogram satellite, 5.8 meters long, consists of a central telescope with five instruments mounted around it to take wide-angle or high-resolution images and to measure broad-band spectra or individual spectral lines. While HEAO-1 tumbles slowly end over end (at about two revolutions per hour) in orbit for its surveying mission, HEAO-2 can be aimed at selected targets to position its telescope, which has a resolution of 1 to 2 seconds of arc. In 1979, NASA plans to launch HEAO-3, last in the series, to survey cosmic-ray and gamma-ray sources, and the agency hopes later to fly an aimable gamma-ray observatory satellite. □

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including grain flows and turbidity currents, and entrained to more distal sectors of the basin than the pebble-rich sediment.

Other examples of pebble-rich deposits prograding above finer-grained, deep-water units on basin margins are recognised in the Carpathians (see Kamenica zone of Czechoslovakia discussed by Marschalko¹⁷). Most of the world's mobile belts, including the Alps¹⁸, Apennines¹⁹, Ouachitas²⁰, Andes^{13,21}, Appalachians¹², California^{22,23}, and New Zealand¹⁴, also display resedimented mass-emplaced conglomeratic series that were deposited on slopes and in some cases displaced to lower gradient base-of-slope, including fan and basin plain, environments. Possible modern analogues of deep water Bucegi type pebble-rich deposits emplaced by mass-flow processes are noted in canyons^{10,24}, on broad sectors of the slope²⁵, and in basin plains distant from source and coastal sectors²⁶.

Our interpretation of the Bucegi requires the rapid evolution of the structural-physiographic configuration and relief of the emerging hinterland west of the Albanian basin. Thus, the rapid transition from marine turbidite-rich to gravel series does not necessitate a marked change from deep to shallow water basin configuration as implied by the 2,000 m of conglomerate in the molasse model, but may reflect the importance of a newly developed fluvially-drained source adjoining the submarine margin. An examination of the pebble and boulder beds similar to the Bucegi that crop out west of the study area such as the younger Cretaceous and Palaeogene series of the Olt, Olanesti, and Vilsan River valleys (Fig. 1c) would be useful in refining the palaeogeographic reconstruction of this sector of the Carpathians.

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Can electromagnetism account for extra-sensory phenomena?

OUR investigations of various alleged extra-sensory phenomena (ESP) over the past three years are reported here, in particular psychokinesis, metal-bending, psychic healing and dowsing. One of our aims was to search for unusual electromagnetic (EM) radiation emitted by subjects while they were achieving or trying to achieve the phenomena. The quest for EM concomitants of ESP is based on our deduction that it is the only known force that could conceivably be involved (ref. 1 and J.G.T. and E. Balanovski, unpublished). In looking for EM signals emitted by people during alleged ESP events we are therefore testing the reality of the corresponding phenomena. There might be no paranormal phenomena at all, so that a search for abnormal EM effects would automatically fail. If we assume that the present evidence for ESP is not firm either way, then its EM characteristics are highly relevant to resolving that problem. If no EM signal were found, this would question the reality of the phenomena whereas suitably strong EM signals would support the claim that ESP effects were occurring. This can be quantified if the sensitivity of subjects to incoming EM radiation is ascertained; for example, sensitivity at least down to the levels of any paranormal emission from others would be necessary for telepathy to occur. We find no abnormal EM signals during the occurrence of supposed ESP phenomena.

Earlier work on EM signals related to ESP has been inconclusive. Cazzamali² proposed an EM explanation of telepathy by means of waves of 10 cm-1 m in wavelength, and he claimed to have detected such emission. These results were never confirmed. Vasiliev³ concluded that telepathy could not be explained by electromagnetism. A critical review of his work shows lack of statistical significance in his results, thus leaving the EM explanation still open. Various other tests⁴ have been put forward to contradict the EM explanation of ESP, but they all exclude some portion of the EM spectrum. It seemed appropriate for us to use suitably sensitive detectors to clarify the position of the EM hypothesis in ESP phenomena.

We used EM detectors covering a wide range of frequencies (Table 1) together with two video-tape cameras, one to keep a continuous record of the subjects' performance and the other to keep a permanent record of the visual readout of some of the detectors. The EM detectors consisted of various antennae with amplifiers producing either a visual display or a written record. For frequencies below 1 MHz both skin electrodes, usually taped to the palm or the wrist of the subject's hands, and wire antennae within 1 m of the subjects, were used. For frequencies in the range of 1 MHz-20 GHz (detectors P_2) two loop antennae were used⁷, one for frequencies below 500 MHz and the other for the upper range. Each antenna was placed against the palm of the subject's hand. For the microwave radiometers T_2 and T_3 horn antennae were used directly on the subject's body. The two crystal detectors P_4 (60-90 GHz and 90-140 GHz) had narrow slits which allowed emission from the subject's fingertips or palms to be measured by direct contact. Background signals above the noise levels of the detectors were picked up in various situations. In d.c.-1 MHz range (detectors E_1 , E_2 , E_3 and P_3) various external signals correlated with transient electric field disturbances produced by passing vehicles were noted at least 10 times above the noise level. In the 1 MHz-120 GHz range (on detectors P_1 , P_2 , P_3 , P_4 , T_1 , T_2 , T_3 , and T_4) no signals above noise levels (of 5 dB) were noted other than various narrow and assignable TV and radio stations (with clear and expected shape under high resolution Fourier analysis) and the expected human

black body emissions. This was detected (on detectors T_1 , T_2 , T_3 and T_4) with a noise level of 0.5 K. A similar level of sensitivity occurred for T_5 in the infrared range. H_1 was sensitive to 1 nT, and T_6 responded to a 10 W UV source.

The outputs were recorded either on strip chart recorders, tape recorders or direct photographs of the detector recording screen (oscilloscope, frequency analyser). The resulting records were then examined visually. Only if an abnormal signal had occurred which was above the noise level and not explicable in terms of external interference or natural human body EM emission, would more detailed signal analysis have been justified.

Because several detectors were spectrum analysers (see Table 1) we have obtained an upper limit to the power level radiated at various frequencies by a person allegedly performing ESP. We have only investigated integrated power levels, as enough power has to be radiated before a signal can achieve its desired effect, whatever modulation the signal may have. In all tests reported the subjects always claimed that they were in a good 'psychic' state. Thus our measurements can be taken as demonstrating the nature of human EM emission during so-called psychic activity. Despite that, we were unable to detect any abnormal EM emission from any of the subjects involved in the following tests.

Psychokinesis is the alleged phenomenon whereby a person is able to achieve movements of objects without physical contact.

(1) Needle-rotation (two subjects, two controls, 92 trials): a needle was suspended by an extra-line nylon thread inside a clear perspex cylinder which was clamped securely to a rigid bench. Movement was achieved by the subjects moving their hands and wrists back and forth around the cylinder at about 5 cm from it. In each of the 12 sessions the subjects produced a 60° average rotation of the needle, sometimes up to 200°. The rotation built up gradually over the first half-hour of each session, and consisted of the needle rotating with the position of the subject's hands near the cylinder. The needle swung back to its equilibrium positions as the subject's hands moved back from the cylinder. Rotation was achieved both by the subjects and the control subjects.

We established that a rotation of 50° was produced by a potential of 2 mV with respect to earth at frequencies d.c.-1 MHz. For up to 60° rotation, measurements on two subjects, by means of skin electrodes (the subjects being earthed) indicated a skin potential of only 0.2 mV. We concluded that the rotation could not be caused by E or H fields from d.c.-1 MHz produced by the subject's body. When an anti-static ointment was rubbed over the surface of the cylinder, the whole phenomenon vanished, indicating that the effect was due to charge induced on the needle from the outer surface of the

cylinder. Analysis of the VTR of the events showed the subjects inadvertently touching the surface of the cylinder in their attempts to move the needle. Further tests showed that the amount of rotation produced was directly correlated to the amount of charge on the outer surface of the cylinder.

(2) Rotation of a straw inside a glass dome (one subject, eight trials): a piece of drinking straw cut in a T shape was fixed onto a light plastic disk and placed on top of a glass of water, full to the brim, enclosed inside a large glass dome (70 cm across). Rotation occurred, up to 20° over 7 s, with the subject sitting quietly, not bringing her hands near the dome. No abnormal levels of EM radiation from the subject were detected.

After half an hour, a mist developed on the wall of the dome further away from the subject, due to condensation of the water from the glass. This was traced to the heat from an electric fire located behind the subject. With the electric fire turned off no rotation occurred. Calculation of the convection current inside the dome with the fire on showed that it was more than sufficient to have caused rotation.

(3) Compass-needle rotation (two subjects, 36 trials): rotation of a compass-needle occurred when the subjects moved their hands back and forth, at a distance of 5-10 cm from the compass case.

EM detection from the subject's body showed no abnormal signals. The amount of rotation was found to decrease with increasing distance between the compass and the subject's body according to the inverse square law. It also decreased when steel sheets were placed between the subject and the compass needle. This indicates an electrostatic origin for the rotation.

Metal-bending (68 subjects, 268 trials): claims of metal-bending can be divided into two groups:

(1) contact bending, that is by stroking; and (2) bending at a distance.

Our experiments were carried out under four separate sets of conditions; in all cases remote EM detectors were present.

(1) A subject was asked to stroke a piece of metal of a length of up to 15 cm. The strip was securely attached to the top of a GPO balance and could only be touched on its upper surface. A video-tape camera recorded the strip, the finger stroking it and the pressure applied at all times. A clock showing the second hand was also included in the picture to assure continuity. (2) Electromyograph (EMG) sensors were placed on the subject's forearms, and a continuous picture of the dials of both EMG boxes was obtained with the VTR, thus giving a permanent record of the pressure applied by the subject. (3) A room with a one-way viewing system^{5,6} was used (these tests were done in collaboration with H. Collins, Bath University); the subjects were informed of the one-way system beforehand, the video-

Table 1 The sensitivity and time constants of the various detectors used in the tests as a function of frequency

Detector	Description of antenna and display used	Frequency range	Sensitivity	Resolution time constant
E_1	Skin electrodes or wire antennae connected to CRT display	d.c.-1 MHz	$10^{-4} \text{ V cm}^{-1}$	1 μs
E_2	Skin electrodes or wire antennae connected to CRT display	d.c.-1 MHz	$10^{-2} \text{ V cm}^{-1}$	1 μs
E_3	Electrometer connected to 10 cm ² metal plate—20 cm from subject	d.c.-1 MHz	$10^{-4} \text{ V cm}^{-1}$	1 μs
H_1	Magnetometer and probe	d.c.-1 kHz	10^{-5} G	1 ns
P_1	Loop antenna and crystal detector—50 cm from subject	d.c.-1,250 MHz	1 V cm^{-1}	1 ns
P_2	Loop antenna connected to broad band frequency analyser	1 MHz-20 GHz	$10^{-3} \text{ V cm}^{-1}$	1 ns
P_3	Skin electrodes connected to frequency analyser	d.c.-1,250 MHz	$10^{-3} \text{ V cm}^{-1}$	1 μs
P_4	Crystal detectors (in contact with subject's hands) connected to microwave detector			
T_1	Loop antenna connected to microwave radiometer	60-140 GHz	1 V cm^{-1}	1 μs
T_2	Horn antenna (contact with body) connected to microwave radiometer	1.4 GHz	1 K	2 s
T_3	Horn antenna (contact with body) connected to microwave radiometer	15 GHz	0.5 K	0.5 s
T_4	Thermocouple and electronic thermometer	19 GHz	0.1 K	0.33 s
T_5	Ge probe and chopper 1 m from subject (IR detector)	3×10^3 - $3 \times 10^5 \text{ GHz}$	0.1 K	1 s
T_6	UV detector	3×10^3 - $3 \times 10^5 \text{ GHz}$	0.5 K	1 s
		0.2-0.35 μHz		0.1 s

The sensitivities were obtained directly by calibration using known external sources, and were evaluated for signals about 2 s.d. above the noise level. The time constants were as specified by the manufacturers. No detector was used at a distance greater than 1 m from the subject.

tape camera was placed on one side of the one-way mirror, while the subject sat on the other side and attempted bending. The GPO balance or the EMGs were used together with this set-up. (4) A more relaxed environment in which neither EMGs nor VTR were used was the only condition in which success was claimed.

Background levels were measured on all the detectors (E_1 , E_3 , H_1 , P_1 , P_4 , T_1) before and after tests and were as expected in the various environments. No signals above background were observed at any time in the whole frequency range d.c.- γ rays. In the lower frequency end of the spectrum about 180 trials were made with each detector, only 15 or so trials were effected at the higher frequencies.

No metal bending at all was obtained under the stricter protocols (1), (2), or (3) but only under the more relaxed environment of (4). This might be related to the psychological stress presented by the more restrictive regimes, as some of the subjects remarked. We gave them the benefit of the doubt and tested them also in their more accustomed setting, where they sometimes were apparently successful. We still obtained no EM signal, although at certain times in the more relaxed conditions (4) metal bending occurred (of paperclips, spoons, prepared strips and so on). Each of these successes took several seconds to minutes to occur.

Attempts were made to cause bending of a strip of metal or plastic, by feeding EM energy into the strip. A Paradyne 10 GHz X-band microwave source was used (50 kW peak power, 0.6 or 2.1 μ s pulse, variable p.r.f. with external modulation). Strips of various metals, plastic and various crystals were irradiated, and vibration of the specimens was observed at the modulation frequency in agreement with surface acoustic wave generation⁸⁻¹⁰. Strips of Al (length 63.4 cm), Cu (length 39.8 cm) and brass (length 51.6 cm) cut to these lengths appropriate to the internal modulation, showed resonance effects (at 1-3 KHz) when inserted in the waveguide of the X-band source. Although energy was thus absorbed in the strips, no bending ever occurred.

The results show that no unusual EM emission from the subject's body was observed over the entire spectrum. If there had been low frequency signals they could not account for the phenomenon as first, their focusing power is very poor, second, the energy transfer is inefficient, and third, the signal levels observed are too low by a factor of about 10^9 to explain the effect. The best candidate would be the microwave range 1-5 GHz; at these frequencies the focusing power is good and the energy transfer can be efficient for the generation of surface acoustic waves as the skin depth in metals at these frequencies is negligible. But no microwave emission higher than the black-body radiation at the human body temperature was ever detected. Microwave radiation emitted by the body corresponds to a power level of 10^{-14} W. Therefore, EM radiation cannot explain the above-mentioned metal-bending cases which only occurred in the relaxed conditions (4).

Psychic healing (six subjects, >12 trials for each detector): by 'psychic healing' we only mean 'laying on of hands' and not the more dubious psychic 'surgery'. Healers claim cures of terminal cancer and other illnesses apparently inaccessible to standard medical practice. Sensations of heat and cold are said to occur during laying-on of hands. Such sensations have been claimed both by the healer and by the patient.

No unusual EM radiation was observed in the range d.c.-140 GHz during 'healing'. The protocol was to attempt detection of enhanced EM levels from the subjects both when the patient was present and when being allegedly healed at a distance. Two video-tape cameras were also used. Detector T_4 was used as a broad-band infrared detector both for emission and sensitivity of the body to this radiation. This allowed us to investigate whether the sensations of cold or heat experienced by the healer or the patient could be correlated to actual decrease or increase of surface skin temperature in the subjects.

The procedure was to measure the temperature of the healer's hands as a function of time and to note what sensation (heat or

cold) the patient was undergoing, and what the healer was attempting (heat or cold). At no time were the temperature readings indicated to the healer or to the patient.

The sequences recorded (typically over 10-20 min) show that the healers had no clear control over the temperature of their hands. Nor were the patient's sensations in any way correlated with surface skin temperature. These sensations cannot be accounted for by subcutaneous heating, as this would involve radiation transfer in the MW or RF ranges; neither was ever observed.

Tests on human sensitivity to low levels of EM radiation (five subjects, two controls): a subject was seated in a room with either a loop antenna (lower frequency range) or a horn antenna (higher range) placed 50 cm from him. The source was in an adjoining room to avoid visual or auditory cueing, conscious or unconscious. The sources used were a tuneable RF source in the range 220-950 MHz with a power output of 1 mW and a tuneable MW source (both pulsed and CW) in the range 6-17 GHz with a power level of 5 mW. The switching on or off of the source was randomised by tossing a coin. The level of success according to chance was therefore 0.5. The subject was then asked to attempt to sense the source being on or off. The results showed that both control and test subjects achieved results not significantly different from chance. This insensitivity to low level EM radiation did not warrant further trials.

Dowsing: we investigated two dowsers for the possibility of EM emission where the 'dowsing reaction' occurred and for their sensitivity to EM radiation (active and passive radar-like type of mechanism). This 'dowsing reaction' is a sudden 'flicking' (up or down) of the rod or rotation of the pendulum when the dowser reaches a certain place at which the object being dowsed for is supposedly located.

During a positive dowsing reaction the EM radiation emitted by either subject from 1 MHz to 22.4 GHz was no different from background levels measured in the detectors before starting or finishing each session.

Telepathy—distant-viewing: telepathy can be defined as the ability of a subject to perceive another subject's thoughts. It involves the transmission of information between a sender and a receiver in a non-verbal fashion. We only investigated integrated power levels, as enough power has to be radiated before a signal can achieve its desired effect, whatever modulation the signal may have. We investigated three subjects who claimed telepathic abilities and one who claimed distant-viewing abilities, in which a subject is supposed to describe accurately a remote site without his being physically there. No EM signals other than background noise were observed on E_1 , E_3 and H_3 . Nor did the tests show evidence of the subjects being successful in telepathic transmissions.

We have tried to detect EM signals emitted by people, and in particular the Fourier spectrum of such signals, to test the reality of ESP phenomena. In particular, we have investigated many different subjects attempting to achieve ESP phenomena, but have failed to detect any unusual EM radiation. The absence of effects on UV detectors or photographic films completed the study of the higher range of the electromagnetic spectrum. We also investigated human sensitivity to low levels of EM radiation over a restricted range of frequencies and found no indication of humans being sensitive to those EM fields. Dowisers, who claimed sensitivity to magnetic fields, down to 10^{-5} G, were also tested and found insensitive to the presence of 100 G.

It is possible to conceive transmission of EM energy from one person to another or of emission by one person in a manner undetectable by the apparatus we have used. This would have been so if very brief pulses of EM energy were used in such signalling with times less than the response time of the corresponding apparatus at the frequency used. There are no known mechanisms in the body able to produce such signals at the power levels required to produce the effects. We have also found that humans are insensitive to low levels of EM. A possible mechanism for such signalling is therefore clearly ruled out for telepathy, distant-viewing and psychic healing. The EM

levels emitted to achieve metal bending (in the microwave range to achieve the desired focusing) are joules¹, and there is no known mechanism in the body to achieve a peak power output of GW; it is difficult to suppose that this would be possible without severe tissue damage.

We can distinguish four different categories of effects from our investigations: (1) the effect occurred but it could be explained in normal scientific terms (psychokinesis); (2) the effect occurred and could have been paranormal (dowsing, faith healing); (3) the effect occurred in less than perfect conditions (some metal bending trials); (4) the effect did not occur (other metal bending trials, telepathy, distant-viewing). The consistent absence of any unusual EM radiations associated with phenomena in all the above categories, in which all the subjects always claimed to be in a good psychic state, causes us to question the paranormal nature of those in categories (2) and (3), because we contend¹ that EM is the only known force that could have been involved in the phenomenon. We therefore conclude that phenomena of category (2) have their natural explanation, dowsing as muscular twitches brought about by subconscious mental activity, faith healing as the purely (albeit complex) psychological effect of the healer on the patient; in particular, metal bending does not come into this category (category (2)) in the cases we have investigated.

We thank the Sedwood Trust for financial support, all our subjects for their patience, and many colleagues for the loan of the equipment.

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Newly discovered fossil hominid skull from the Afar depression, Ethiopia

DURING a palaeontological, archaeological and geological survey in the Awash River Valley, Ethiopia, members of the Rift Valley Research Mission in Ethiopia (RVRME) recovered much of the facial skeleton and neurocranium of an early hominid. The specimen, which we describe here, is one of the best preserved and most complete of its kind yet discovered in Africa and is unique in its close association with stone tools.

The site of the discovery, Bodo D'Ar, is situated in north-western Hararge Province (Fig. 1). Hominid material was first discovered at the site in autumn 1976. Field work completed by March 1978 has produced abundant faunal and archaeological material associated with the hominid specimen. The fauna and associated artefacts are derived from layer B of the Upper Bodo Beds (J.E.K. *et al.*, unpublished). The presence of many hippopotamus remains, including several skeletons, associated with stone tools, suggests that this was a site at which carcasses were

butchered by early hominids. Further archaeological investigations, to be carried out in the near future, should elucidate the nature of this association in more detail (W. Singleton, P. Larson, H. Mosca, F. Wendorf, unpublished). The palaeontological and archaeological evidence is consistent with a Middle Pleistocene (0.7-0.125 Myr BP) age for the hominid-bearing deposits (J.E.K. *et al.*, unpublished).

The specimen was discovered after weathering out of the surface of the Upper Bodo sand unit. This consists of 5.5-6.0 m of horizontal grey conglomerate and sand and contains many mammalian fossils and artefacts. Virtually all the artefacts are made from basalt. Two large pieces of the facial skeleton were found 11 m apart by Alemeyehu Asfaw, P. Whitehead and C. Wood. The first piece to be discovered consisted of the lower part of the facial skeleton. This fragment had been broken from the upper face along a line running across the middle of the left orbit and through the nasion. It included the facial skeleton below the midpoint of the orbits, together with most of the palate. The second fragment included the upper half of the left orbit, most of the right orbit, the anterior part of the frontal bone, and the basicranium from the pterygomaxillary fissure to the basion. As the fit of these two pieces along the line of breakage is perfect, there is no doubt as to the proper alignment of the face and the cranial vault.

Forty-six smaller skull fragments were collected from the area immediately surrounding the two major fragments in 1976 and a further 30 pieces were found by sieving the area in 1978. Of this total, 41 were subsequently pieced together and fitted to the facial-frontal fragment. All fragments are in direct contact with each other and thus we have little doubt that the shape of the reconstructed cranium accurately reflects the true contours of the cranial vault.

The specimen consists of an almost complete face and partial neurocranium and includes most of the frontal bone, both nasal bones, the left zygomatic bone except for the temporal process, the left maxilla and part of the right maxilla, the sphenoid bone and portions of the left temporal bone, left and right parietal bones, and occipital of the right side. The orbits, the nasal cavity, the anterior part of the endocranial cavity and part of the cranial base are still encrusted with a hard matrix of sandy microconglomerate. Many of the more delicate bones such as the lacrimals, ethmoids and lesser wing of the sphenoid are present within the matrix (Figs 2-4).

Much of the basicranium anterior to the basion is present, including the left mandibular fossa and articular eminence, the basioccipital and the petrous portion of the temporal bone. Foramina for the mandibular division of the trigeminal nerve (foramen ovale), the middle meningeal artery (foramen spinosum) and the internal carotid artery (carotid canal) are visible. About two-thirds of the palate is preserved and the roots or alveoli of all the maxillary dentition, except for P⁴-M³ on the right side, are present but no crowns of teeth are preserved. Posterior to the right fourth premolar the maxilla has been broken away revealing a large, matrix-filled maxillary sinus.

The skull is large and ruggedly built and the face is notably large and robust. The nasal root is broad, the supraorbital ridges are thick and the zygomatic bone is deep and heavily constructed. The supraorbital ridges are arched and separated by a prominent glabellar region, rather than forming a continuous bony shelf; they are approximately 17-18 mm thick at the midpoint of the orbital rim, thicker than the average for the Choukoutien *Homo erectus* sample (15.5 mm) and at the high end of the range for Javan *Homo erectus* and the Solo skulls^{1,2}, but somewhat less than the Broken Hill specimen (about 21 mm). The total breadth across the supraorbital torus (139 mm) is greater than that of any of the Javan fossils (110-126 mm), being more comparable to that of the Broken Hill specimen (141 mm). The interorbital breadth at the maxillofrontale is great (34.5 mm) and the piriform aperture broad and low. The nasals are moderately prominent in norma lateralis, being comparable to those of the Broken Hill specimen.

Secret Russian Test Proves Mental Telepathy Does Exist

Top Soviet scientists claim they have proven beyond a doubt that mental telepathy exists.

A startling secret report and photographs smuggled out of Russia by ENQUIRER editors document the incredible breakthrough and give fascinating details of the experiments that led the researchers to their conclusion.

Western experts — told about the experiments — hailed them as "astonishing," "sensational" and "startling."

They also concluded that the Russians may be well on their way to communicating telepathically with cosmonauts in space. And they warned that if the Soviets master telepathic communication, it could be used for military purposes.

"This research is startling — this is a whole new range of experiments," declared Dr. John Gschwendtner, professor of physics at Dowling College in Oakdale, N.Y.

Dr. Gerry Cupchik, professor of psychology at Scarborough College, University of Toronto, marveled: "It has sensational implications."

In experiments carried out between 1975 and 1977, Russian researchers killed rats with drugs. Then, with electrodes on to the rats' brains, they recorded brain activity stimulated when a psychic projected thoughts at the dead animal.

"There is no doubt that the emotions of the psychic were carried telepathically to the brain of the dead rat," declared leading Soviet parapsychologist Eduard Naumov, who analyzed the secret report that The ENQUIRER had obtained from another source.

"This is proof that telepathic communication has been achieved."

The experiments were con-



AFTER DEATH rat's brain waves show no activity (left), but show graphic disturbances (right) when a psychic directs thoughts at the dead animal's brain.



ducted at the Research Institute of Psycho-Neurology at Kharkov University in the Soviet Union. The researchers attached each rat's brain to electrodes from an electroencephalograph (EEG), a machine that records brain wave activity.

Each rat was placed in a chamber screened off to prevent any type of outside interference, including electrical. Then the rat was killed.

A psychic would enter the



SOVIET EXPERT Eduard Naumov: "This proves telepathic communication has been achieved."

laboratory 15 minutes after the rat's brain activity has ceased altogether — evidence that a creature is clinically dead.

When a psychic directed his thoughts and emotions at the dead rat, the EEG recorded renewed electrical activity in the rat's brain, according to the astounding Soviet report.

Naumov detailed one of the experiments.

"Within one minute of the psychic trying to direct his emotions at the rat, the rat's brain showed a response on the EEG. He laughed and the rat's brain reacted. Then the psychic did mental arithmetic and the rat's brain again reacted.

"The dead rat registered reaction to the psychic's emotions for three minutes. All the while, there was no physical response from the rat."

The report on the experiment — published in Russia for official use only — were obtained by The ENQUIRER on the condition that the source not be revealed because he feared retaliation from the KGB, the Soviet secret police agency.

The source said he believed the free world should know about the secret experiments. He said they could "surely be

considered a military secret" and added, "it is essential that your scientists learn about our experiments and draw their conclusions."

Even the report itself dramatically concludes: "The researchers believe that their discovery will have important applications in space flight communications."

Physics professor Gschwendtner warned: "If a nation were to master the use of telepathy, there could be many applications. It could be used to send supersecret messages to battlefield commanders instantly."

Dr. Ernest Harrell, a psychologist who lectures in parapsychology at North Texas State University, added:

"The Russians do a lot of telepathic research and it's extremely likely that they are attempting to make cosmonaut contact. The implications are obviously huge."

And Dr. James C. Logan, a psychologist who lectures in parapsychology at Rockhurst College in Kansas City, Mo., enthused: "Those (scientists) in Russia are very sophisticated. It's astounding!"

— WILLIAM DICK & HENRY GRIS

transmission is used. It is sufficient to press a button, and an electric motor adjusts the driver's seat to make it more comfortable for him. There are special safety devices. The reliability of the brake system is insured by two independent lines, each of which acts simultaneously to brake the front wheels and one of the rear. A warning light signals the failure of a line.

(A photograph is given showing the GAZ-14 "Chayka".)

* * *

Author: Sergeyev, G., Doctor of Technical Sciences

Title: BIOPLASMOGRAPH INSTRUMENT FOR STUDIES IN PSYCHOENERGETICS

Primary source: ~~Nashkova~~, September 4-10, 1978, No. 36 (964), p. 12, cols. 1-2

Abstract: The author responds to a question submitted by a reader asking if an instrument exists which can determine whether a person possesses an electrical potential, or 'biofield.' The author begins his response with a description of a unique capability he has witnessed in some individuals to mentally create a 'spatial tunnel effect,' which he says is analogous to electromagnetic phenomena in radio engineering. He relates examples of this capability which he has observed. In one, it is claimed that a woman mentally projected geometric figures with photographic paper wrapped around her head, and the figures appeared on the paper when it was subsequently developed.

The author reports that increased biofield intensity and magnetic eddies can be detected around such individuals, and they can be registered by a special instrument called a bioplasmograph. The primary feature of this instrument is said to be a solid disk made of an organic substance containing cholesterylacetate, a powdery substance which is a liquid crystal. This substance is said to be extremely sensitive to changes in its environment, registering very weak interactions of any fields, and also magnetic eddies. The author notes that magnetic eddies possess real kinetic energy, and that they can be caused by individuals who can mentally create the spatial tunnel

effect. Although the energy of magnetic eddies is quite weak, the author observes that this energy can be amplified with the aid of modern radio devices.

In addition to applications in psychoenergetic studies, the author notes that the bioplasmograph is also very sensitive to gravitational anomalies and is therefore useful to geologists. It can also be used as a stimulator for heart functions, because it enters into resonance with heart biorhythms. By carrying a cholesterylacetate plate in a pocket, it is said that a person can sustain active heart functions.

* * *

Title: INTERNATIONAL SEMINAR ON INSTRUMENT BUILDING FOR SPACE RESEARCH

Primary source: Sovetskaya Kirgiziya, September 2, 1978, No. 203 (15178), p. 1, cols. 4-6

Extract: The second international seminar of socialist countries, "Scientific space instrument building", opened on September 1, in Frunze. It was organized by the USSR Academy of Sciences, the Council on International Cooperation in the Area of the Research and Use of Outer Space "Interkosmos", and the Institute of Space Research. Scientists and specialists from Bulgaria, Hungary, East Germany, Poland, the USSR and Czechoslovakia are taking part in the work of the forum. More than 100 papers and reports will be heard on methods and principles for developing scientific instruments, methods and means for scientific experiments on spacecraft, and others.

The seminar will last six days.

* * *

Author: Talyzin, N. V., USSR Minister of Communications

Title: THE NATIONWIDE DATA TRANSMISSION SYSTEM

Primary source: Ekonomicheskaya gazeta, September, 1978, No. 36, p. 7, cols. 1-4

Abstract: The article continues a series based on materials of the second all-Union conference on use of computers and computerized systems. The author gives a lengthy discussion of the organization of the Nationwide Data Transmission System (OGSPD),* which

*See also the Daily SNAP, June 29, 1978, p. 3, col. 1 (continued next page)

10 Part VII—Sun., Mar. 2, 1980

Los Angeles Times

China Scientists Forecast Big Future in ESP Studies

BELJING (UPI)—Chinese scientists have been baffled by studies of children who can "see" objects hidden in boxes, read Chinese characters tucked under their armpits and identify colors without using their eyes, according to reports.

"Using today's scientific knowledge, we still cannot explain this kind of phenomenon," the Chinese scientific magazine *Nature* said in an article on such children.

Beijing Radio reported that a scientific meeting was held recently in Shanghai on extrasensory perception experiments with 14 unusual children.

They showed an ability to sense colors and "read" single Chinese characters with their ears, armpits, noses and stomachs.

Some could identify colors of pieces of paper hidden in envelopes or boxes by sniffing the containers.

They showed a high success rate at identifying Chinese ideographs written on pieces of paper concealed in boxes or envelopes, the broadcast said.

"Although modern science has developed to today's level, our knowledge of the human body is still not enough. Much of the phenomena of human life cannot be explained today," *Nature* magazine said.

The magazine reported two sisters from Beijing, Wang Bing, 11, and Wang Giang, 13, could identify Chinese characters written on slips of paper by tucking the paper into their armpits.

When one girl perceived a character through the method, the other had only to touch her sister to find out what the paper said.

The girls told scientists that the shapes and colors of the objects, which they did not see with their eyes, simply appeared in their minds.

The report said both girls suffered from poor eyesight.

A recent edition of the *Guangming Daily* newspaper said the cases of the unusual children were being studied by an air force doctor. He theorized their hands and ears might be capable of transmitting and receiving radar-like waves, but could find no acceptable explanation.

In a speech at the Shanghai meeting, *Nature's* editor, He Tongin, said the children raise many questions in biology and medicine.

"These talents must be researched because they are an important new discovery," he said. "This topic has a big future and will increase our knowledge of the human body."

CHISHOLM

Continued from 9th Page

through Oklahoma pass close to documented Chisholm route and confused in various accounts of famous path's origin.

But Moran says he knows the answer. The Abilene Trail, used on cattle drives, ran west of the Chisholm Stage Road followed the Chisholm but came after it, he said.

Why did early territorial pioneers change the trail's name from Chisholm to Stage Road?

"It had become the stage road; one you stood on to catch the stage," Moran said. "That's simple."

Documentors of Oklahoma history have trouble mapping the Chisholm Trail, passing from Kansas into Oklahoma and eventually into Texas. Maps show it anywhere from a line parallel to U.S. Highway 81 through central Oklahoma to distant lines either side.

Muriel Wright, writing for

Robinson Spring Home

SCIENCE

Coincidence: paranormal event or just the luck of the throw?

Things that happen at the same time have a special relationship to each other; researchers ask why

By Elaine Kendall

Most of us live on such familiar terms with the idea of coincidence that we think of it in offhand catch phrases and react to it with stock responses. We describe coincidence as funny, fantastic, weird, or bizarre; dismiss it as "mere," "only," or "lucky"; use it for small talk. Of all the paranormal phenomena, coincidence remains the least controversial and the easiest to accept. It's not as intimidating as precognition, as unsettling as *déjà vu*, or a nuisance like psychokinesis. Coincidence is just a capricious old friend, amusing but undependable, responsible for "I was just about to phone," "Imagine meeting you here," and "How odd that three new books about Napoleon were published this week."

On any sliding scale of extrasensory perception, coincidence would rate no more than a comfortable two or three. Whenever it's startling or dramatic enough to disconcert us, we explain away our unease by the laws of chance and probability, which are

elastic enough to accommodate the most unwieldy circumstances. The odds may be a million to one; but odds are odds, and it's reassuring to know that they're there, keeping the world in bounds and in perspective. We don't consider ourselves in an altered state of consciousness every time we run into a classmate at the movies, win the daily double, or miss the plane with engine trouble. We call it chance and let it go at that.

Coincidence functions so unpredictably that it could never draw the crowds that come to see demonstrations of levitation or psychic healing. Because it has no charismatic gurus and makes no special claims or promises, the popular literature on *New Frontiers of Mind* tends to slight it. Coincidence doesn't televise as well as key bending or even dowsing. It's not as titillating as UFO's nor as pretty as Kirlian photography.

Coincidence supplies the novelist's plot,

the poet's metaphor, and the historian's inevitability, the theologian's miracle, the artist's inspiration, the statesman's manifest destiny, and the philosopher's unity. Very often, it's also responsible for the scientist's success, and that may be why science organizes to fight back.

Coincidence is, in fact, the most protean of all phenomena, changing shape and form to operate on every level of existence, appearing in such elaborate masquerade that it often goes unrecognized. We could hardly manage without it.

Explicit information about coincidence seems curiously skimpy and dated, and even the newest books about paranormal experience depend rather heavily on incidents reported a half-century ago. There was a flurry of interest at about the time that the Titanic sank, and a great many people remembered feeling chills as the ship went down; but equally dramatic and verifiable examples have seemed increasingly rare ever since. Coincidence seemed to decline in direct proportion to transatlantic boat travel.

Train wrecks also produced some fine examples of coincidence, but cars and planes have not added much to our knowledge. Danger alone is not enough. Coincidence seems to require an element of romance to function well. The most remarkable examples have always seemed to pertain to disaster and death, which may partially explain why investigation has lagged in favor of cheerier topics. Moreover, people tend quite naturally to attribute happy and fortuitous occurrences to their own worthy efforts, instead of to outside forces. As a result, the Society for Psychological Research hears much more about unpleasant ones. The official records are full of intimations of assassination, earthquake, fire, and flood, but the routine synchronicity that constantly bends our lives is hardly noted at all. And that may be just as well. There's so much of it around that selectivity is essential to keep the topic interesting.

Because coincidence is still the nearest thing we have to a universal phenomenon, it has engaged the attention of some extremely notable minds, but usually privately and generally with inconclusive results. Until very recently, however, these informal experiments were carried on rather quietly, among congenial friends, but now the subject is no longer confined to parlors.

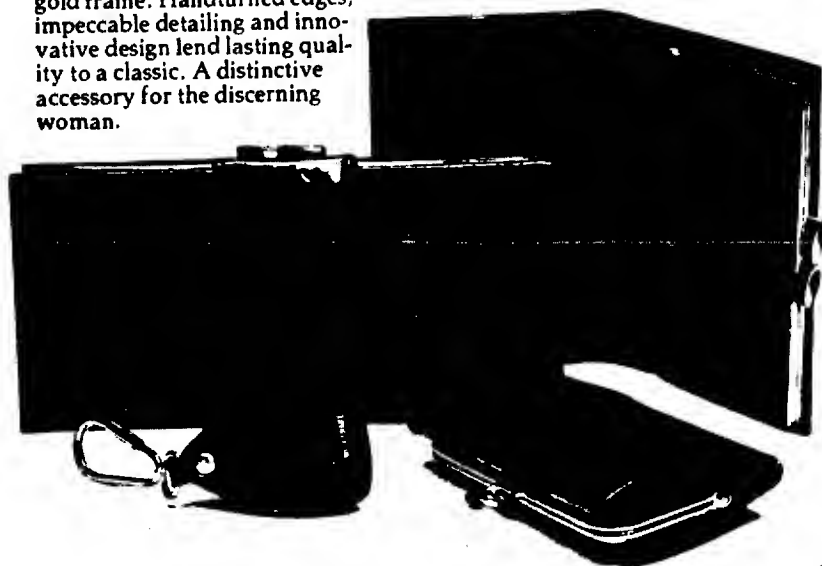
In February 1974, Professor John Wheeler, the eminent nuclear physicist, lecturing a group of his colleagues at Oxford, said that "there may be no such thing as 'the glittering central mechanism of the universe.' Not machinery but magic may be the better description of the treasure that is waiting." Such a statement would have been unthinkable fifty years ago.

Even in an area like psychiatry, where an exploration and understanding of how coincidence works would seem most rewarding, the Establishment attitude has continued to be somewhat aloof. "There's a divinity that shapes our ends./Rough-hew them how we will" is fine drama but poor therapy. In the 1950s, when Carl Jung published his thoughtful essay on synchronicity and its effect upon personality development, other psychiatrists were curiously unresponsive to this phase of his work. Their attitude was adamant, but understandable.

Coincidence makes a wonderful excuse
(Continued on page 274)

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COINCIDENCE

(Continued from page 268)

for irresponsible behavior of all kinds. Adultery, for instance, would be difficult if not impossible without it. Moreover, coincidence does tend to boggle the mind and to resist interpretation, thus making the work of the psychotherapist even more tedious than it already is. Perverse, tricky, and intriguing, coincidence reduces the most carefully constructed and logical argument to a shambles. The speculative sciences find it hard to tame; the exact sciences cannot be blamed for wanting it to go away.

The greatest single trouble with coincidence has always been the fact that it cannot be produced upon demand. Because accounts of coincidental happenings are invariably what scholars disparagingly call anecdotal, the whole topic suffers from a competitive disadvantage. Anecdotal evidence, no matter how persuasive, is difficult to duplicate and verify but very easy to exaggerate. It leaves the serious intellectual community cold. Coincidence, therefore, has always had an anomalous place in research; and, until very recently, it has remained there, an embarrassment and a menace to almost everyone concerned. The parapsychologists were welcome to it, and it became theirs by default.

Now, reconsidered as another kind of causal event, coincidence is suddenly attracting a fair share of attention from the more orthodox scientists as well. New tests and more imaginative experiments are luring it out of its corner. Physicists and mathematicians, who routinely deal in imperceptible aspects of the universe, have always known that coincidence could not be ignored or dismissed, though not all of them were eager to admit it. Philosophers and psychologists have become more receptive than before; and there is constant experimentation in all these fields, controlled and cautious attempts to excavate what Arthur Koestler calls *The Roots of Coincidence*.

At UCLA, Thelma Moss, Ph.D., and her colleagues at the Neuro-psychiatric Institute conducted a variety of tests that show that "coincidence" can be encouraged if one provides the proper conditions. Emotion, for example, seems to be a definite factor in its occurrence. If one person attempts to guess the subject matter of a picture that another person is being shown, his chances of being right seem best when the scene is violent or tragic, only fair when it's pleasant or even sensual, and merely average when it's bland. And if the two people participating in the experiment are related in some way, they seem to be significantly more adept at this exercise than total strangers. Somewhat inadvertently, this particular project also seemed to prove that bad news travels fast, just as millions of ordinary people have always suspected it did.

Ongoing research, with more dramatic implications, is currently being performed at SRI International in Menlo Park, California, by Russell Targ and Harold Puthoff, Ph.D., both physicists with impressive academic credentials and solid backgrounds in traditional scientific research.

Targ and Puthoff have been producing coincidence more or less on order since 1974, and have documented their results in their book *Mind-Reach* (Delacorte). The Targ-Puthoff trials are hard to classify exactly, since they cross the arbitrary boundaries that have always separated coincidence from its more eccentric relations—telepathy, clairvoyance, and that most troublesome connection of all, the out-of-body experience. *Mind-Reach* deals with what its authors prefer to call "remote viewing," but the elements of coincidence are strong and the family resemblance is unmistakable.

Remote viewing, a nice neutral term for an astonishing blend of phenomena, works this way. The subject is comfortably established in a soundproof, electrically shielded room and given a set of map coordinates indicating a specific place on the globe. Any area will do, as long as an adequate description of it is available and can be verified. The location is chosen at random. The subject then draws a sketch of the site, indicating as best he can its significant features—its outline, buildings, bodies of water—whatever comes to mind. Remote viewing is not telepathy, because telepathy is mind to mind; nor is it clairvoyance, which is mind to event. It comes closer to something that has been extravagantly called "astral travel," but that sounds too bizarre for what has become a normal everyday exercise for a group of normal everyday people.

The remote viewers are getting the facts right; not always exactly, but generally in the essential particulars, putting rivers, lakes, trees, hills, structures, and roadways in the proper places and more or less in proportion, and often including such specific details as window shapes, statues, and so on. Do they do this only by coincidence? Probably by something very like it but more reliable. Photographs of the actual sites taken at a later date and

(Continued on page 276)



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COINCIDENCE

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reproduced in the book next to the drawings show startling correspondences.

Targ and Puthoff have now tested more than fifty people, and they maintain that the majority of their subjects have been able to accomplish the assignment. Skeptics are no worse at it than true believers; and, although some subjects are far more adept than others, no one has failed entirely. Distance seems to make little difference in accuracy or the lack of it. A school building in the neighborhood is no easier to reproduce than an airport in Central America or an island in the South Pacific.

The experiments have been continually escalating in difficulty with no decrease in efficiency. Some participants have even been taken undersea in a submarine where their perceptual abilities seem to function as well as in the lounge chairs at Menlo Park. Most people seem to improve with practice, getting more proficient at this curious job just as they might get better at backhand volleys or Beethoven sonatas.

The boredom that usually afflicts such research projects has not been a problem with this one. Remote viewers, once aware of their new ability, seem delighted to exercise it. One veteran of the Stanford experiments, a Los Angeles photographer, has offered to assist a team of archaeologists; and the buried ruins are turning up where she says they will be, thereby saving a great deal of time, trouble, backbreaking labor, and foundation money. A forthcoming book by Stephan Schwartz, *The Secret Vaults of Time* (Grosset & Dunlap), shows that archaeologists have long made use of such special help, though the information has not been generally bruited about until the recent surge of interest in such matters. If this particular strain of coincidence could be tamed, directed, and applied, its implications would be enormous. So far, none of the remote viewers has reported locating an oil field or a uranium mine, but the potential is there.

Russell Targ provided an elementary demonstration of remote viewing by asking me to describe an object on his desk. At that point, I had neither met him, been to his office, nor yet talked to any of the subjects. The only connection between my office in Santa Monica and his in Menlo Park was the Pacific Telephone Company line, which works no better than its counterparts elsewhere and often not as well. "Describe what I'm looking at," he said. "Color, size, kind. Draw it. Don't try to read my mind."

"Something natural," I said. "Not manufactured. No particular color—maybe beige or grey. Neutral. Not completely round but no sharp corners."

"Not bad," Targ said. "I've got a quartz globe on a rectangular stand on a tan blotter." Pens, pencils, a typewriter, pictures, books, or the phone itself would have been more logical guesses and easy outs. I could have chosen them, but I didn't.

It has since occurred to me that Russell Targ may have a table piled with so many objects of every description that it could be impossible to miss; but, then again, he may not. Scientists usually prefer an uncluttered work surface, and though one correct guess is surely coincidence, it's also a score of 100 percent.

All of us, of course, have learned to exploit coincidence to some extent. We give it other and more acceptable names—opportunity, accident, hard work, talent, even faith—because we need to feel responsible for our lives. But suppose, for a moment, that we could train ourselves not just to take advantage of these happy conjunctions when they happen but to generate them? The Mind-Reach subjects have apparently made considerable progress in this direction, within a relatively short time and without interfering with their other duties or obligations.

In *Janus* (Random House), his newest book of speculative essays, Arthur Koestler maintains that the human brain is a "luxury organ," one "developed in advance of the needs of its possessor." Koestler derived that notion from Alfred Russell Wallace, the man who developed a theory of evolution by natural selection in the same year that Charles Darwin proposed his, an intellectual feat that remains one of the greatest intellectual coincidences of all time.

The brain has not changed at all since we were loping around in the primeval ooze, though the uses to which we have put it have expanded significantly. According to Koestler, the Cro-Magnon crouching in his cave chipping stone and bludgeoning game already possessed the incredible organ that would eventually put men on the moon. He had, however, no notion of its possibilities. Little by little, by the aid of stars, millennia of marvelous hits and horrendous misses, centuries of successful trial and ghastly error, he learned. A little. There is no reason to believe that we have yet made every one of the possible connections. None at all. ▽

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